What is claimed is:

1. A method of making a cross-linked cellulosic fiber, comprising:

treating cellulosic fibers with caustic;
forming a wet laid sheet of fibers;
supplying a cross-linking agent to the sheet of fibers to form a sheet impregnated with the cross-linking agent; and
drying and curing the cross-linking agent on the impregnated sheet of cellulosic fibers to form intra-fiber cross-links.

2. The method of Claim 1, wherein the fibers are treated with caustic which comprises treating cellulosic fibers with an aqueous solution of sodium hydroxide, washing the fibers, and neutralizing the treated fibers.

3. The method of Claim 2, wherein treating the cellulosic fibers with caustic is carried out in an aqueous solution containing about 0.5% to about 40% by weight sodium hydroxide, based on the total weight of the solution.

4. The method of Claim 2, wherein treating the cellulosic fibers with caustic is carried out in an aqueous solution of sodium hydroxide at 2 to 10% consistency.

5. The method of Claim 2, wherein washing and neutralizing is carried out until the residual water has a pH of between 3 and 8.

6. The method of Claim 2 wherein the cellulosic fibers are caustic treated in sheet or roll form.

7. The method of Claim 2, wherein the caustic treated cellulosic fiber is in the dry or wet state.

8. The method of Claim 2, wherein the α-cellulose content of the caustic treated cellulosic fibers is greater than 65%.

9. The method of Claim 8, wherein the α-cellulose content is at least 90%.

10. The method of Claim 1, wherein the cross-linking agent is one or more acid aldehyde organic molecules containing aldehyde and carboxylic acid functional groups, and wherein the cross-linking agent is supplied to the caustic treated fiber in an aqueous solution.

11. The method of Claim 1, wherein a mixture of cross-linking agents are supplied to the optionally caustic treated fiber, the mixture comprising a primary cross-linking agent and a secondary cross-linking agent, and wherein the mixture is supplied to the fiber in an aqueous solution.

12. The method of Claim 11, wherein the secondary cross-linking agent is supplied as an aqueous solution with a surfactant, the secondary cross-linking agent comprising a polyepoxide having a substituent selected from the group consisting of hydrogen; hydrophobic saturated, unsaturated, cyclic saturated, cyclic unsaturated, branched, unbranched alkyl groups; and mixtures and combinations thereof.

13. The method of Claim 12, wherein the surfactant is selected from the group consisting of nonionic, anionic, cationic surfactant, or combinations and mixtures thereof.

14. The method of Claim 1, wherein the cross-linking agent is supplied to the cellulose fiber in an amount from about 0.5 to 10% by weight, based on the total weight of the fiber.

15. The method of Claim 1, wherein the cross-linking agent is supplied to the cellulosic fibers in an amount from about 2 to 5% by weight, based on the total weight of the fiber.

16. The method of Claim 10, wherein the aqueous solution of acid aldehyde cross-linking has a pH from about 1.5 to about 4.0.

17. The method of Claim 12, wherein the surfactant is added in an amount of from about 0.01 to 5 % by weight, based on the total weight of the cross-linking agent.

18. The method of Claim 1, wherein drying and curing is conducted at a temperature within the range of from about 320°F to about 435°F.

19. The method of Claim 1, wherein drying and curing is conducted for about 3 minutes to about 15 minutes at temperatures within the range of from about 320°F to about 435°F.

20. A method of making a cross-linked cellulosic fiber, comprising:

optionally treating individualized cellulosic fibers with caustic;

forming a non-woven mat or fluff of the optionally caustic treated individualized fibers;

supplying a cross-linking agent to the non-woven mat or fluff of the optionally caustic treated individualized fibers to form an impregnated non-woven mat or fluff impregnated with the cross-linking agent; and

curing the cross-linking agent on the impregnated non-woven mat or fluff to form intra-fiber cross-links.

21. A method of making chemically cross-linked cellulosic fibers comprising:

forming a wet laid sheet of the cellulosic fibers;

applying an acid aldehyde cross-linking agent to the cellulosic fibers in the sheet form to form a sheet of impregnated fibers;

fiberizing the sheet in a hammermill to form fluffed fiber impregnated with a cross-linking agent; and

curing the cross-linking agent impregnated in the fluffed fiber to form intra-fiber cross-links.

22. The method of Claim 21, wherein the cellulosic fiber is a wood pulp fiber selected from the group consisting of hardwood pulp, softwood cellulose pulp obtained from a Kraft or sulfite chemical process, and combinations or mixtures thereof.

23. The method of Claim 21, further comprising drying the sheet of impregnated fibers prior to fiberizing the sheet in a hammermill.

24. The method of Claim 21, wherein the sheet of impregnated fiber produced in step is not dried prior to fiberizing the sheet in a hammermill.

25. The method of Claim 21, wherein the acid aldehyde cross-linking agent is at least one acid aldehyde organic molecule containing aldehyde and carboxylic acid functional groups.

26. The method of Claim 25, wherein the acid aldehyde cross linking agent is selected from the group consisting of glyoxylic acid, succinic semialdehyde, and mixtures and combinations thereof.

27. The method of Claim 25, wherein the acid aldehyde cross-linking agent is applied to the fiber in an aqueous solution.

28. The method of Claim 25, wherein the acid aldehyde cross-linking agent has a pH from about 1.5 to about 4.0.

29. The method of Claim 21, wherein the cross-linking agent is applied to fiber in an amount from about 0.5 to 10% by weight, based on the total weight of the fiber.

30. The method of Claim 29, wherein the cross-linking agent is applied to the fiber in an amount from about 2 to 5% by weight, based on the total weight of the fiber.

31. The method of Claim 21, wherein curing takes place at a cure temperature within the range of from about 300°F to about 435°F.

32. The method of Claim 21, wherein curing takes place for about 0.5 minutes to about 8 minutes at a cure temperature within the range of from about 300°F to about 435°F.

33. The method of Claim 21, wherein the cross-linked fibers produced thereby have an absorbent capacity of at least about 9 g saline/g fiber.

34. The method of Claim 21, wherein the cross-linked fibers produced thereby have a dry bulk of at least about 12 cm^3/g fiber.

35. The method of Claim 21, wherein the cross-linked fibers produced thereby have a centrifuge retention capacity of not more than 0.6 g saline/g fiber.

36. The method of Claim 21, wherein the cross-linked fibers produced thereby have a free swell of at least about 10.0 g saline/g fiber.

37. An absorbent article comprising a cross-linked cellulosic fiber having a centrifuge retention capacity of less than about 0.48 grams of a 0.9% by weight saline solution per gram of fiber.

38. The absorbent article of Claim 37, wherein the absorbent article is at least one article selected from the group consisting of infant diapers, feminine care products, training pants, and adult incontinence briefs.

39. The absorbent article of Claim 37 comprising a liquid penetrable top sheet, a liquid impenetrable back sheet, an acquisition layer, and an absorbent structure, wherein the acquisition layer is disposed beneath the top sheet, and the absorbent structure is located between the acquisition layer and the back sheet.

40. The absorbent article of Claim 39, wherein the acquisition layer comprises the cross-linked fiber.

41. The absorbent article of Claim 39, wherein the absorbent structure comprises a composite of superabsorbent polymer and cellulosic fiber.

42. The absorbent article of Claim 41, wherein the superabsorbent polymer is selected from the group consisting of polyacrylate polymers, starch graft copolymers, cellulose graft copolymers, cross-linked carboxymethylcellulose derivatives, and mixtures and combinations thereof.

43. The absorbent article of Claim 41, wherein the superabsorbent polymer is in the form of fiber, flakes, or granules.

44. The absorbent article of Claim 41, wherein the superabsorbent polymer is present in an amount of from about 20 to about 60% by weight, based on the total weight of the absorbent structure.

45. The absorbent article of Claim 41, wherein the cellulosic fiber comprises the cross-linked cellulosic fiber.

46. The absorbent article of Claim 45, wherein the cellulosic fiber comprises a mixture of the cross-linked cellulosic fiber and cellulosic fiber.

47. The absorbent article of Claim 46, wherein the cellulosic fiber is a wood pulp fiber selected from the group consisting of hardwood pulp, softwood cellulose pulp obtained from a Kraft or sulfite chemical process, caustic treated wood pulp, rayon, cotton linters, and combinations or mixtures thereof.

48. The absorbent article of Claim 46, wherein the cross-linked cellulosic fiber is present in the mixture of fibers in an amount of from about 1 to 70% by weight, based on the total weight of the total fiber.

49. The absorbent article of Claim 48, wherein the cross-linked cellulosic fiber is present in an amount of from about 10 to 40% by weight, based on the total weight of the total fiber.

50. The absorbent article of Claim 46, wherein the mixture of cellulosic fiber is present in an amount of from about 10 to about 80% by weight, based on the total weight of the absorbent structure.

51. The absorbent article Claim 46, wherein the mixture of cellulosic fiber is present in an amount of from about 20 to about 60% by weight, based on the total weight of the absorbent structure.

52. The method of Claim 20, wherein the cross-linked fibers produced thereby have a centrifuge retention capacity of not more than 0.48 g saline/g fiber.

53. The method of Claim 20, wherein the fibers are cross-linked with a mixture of cross-linking agents selected from the group consisting of: a mixture of glyoxylic acid and citric acid; a mixture of glyoxylic acid and polymaleic acid; and a mixture of glyoxylic acid, citric acid, and polymaleic acid.

54. The method of Claim 21, wherein the fibers are cross-linked with a mixture of cross-linking agents selected from the group consisting of: a mixture of glyoxylic acid and citric acid; a mixture of glyoxylic acid and polymaleic acid; and a mixture of glyoxylic acid, citric acid, and polymaleic acid.

55. The method of Claim 20, wherein the fibers are cross-linked with a mixture of cross-linking agents selected from the group consisting of: a mixture of glyoxylic acid and citric acid; a mixture of glyoxylic acid

and a terpolymer of maleic acid, vinyl acetate, and ethyl acrylate; and a mixture of glyoxylic acid, citric acid, and a terpolymer of maleic acid, vinyl acetate, and ethyl acrylate.

56. The method of Claim 21, wherein the fibers are cross-linked with a mixture of cross-linking agents selected from the group consisting of: a mixture of glyoxylic acid and citric acid; a mixture of glyoxylic acid and a terpolymer of maleic acid, vinyl acetate, and ethyl acrylate; and a mixture of glyoxylic acid, citric acid, and a terpolymer of maleic acid, vinyl acetate, and ethyl acrylate.

57. The method of Claim 1, wherein drying is conducted at a temperature within the range of from about 150 to about 300°F, and curing is conducted at a temperature within the range of from about 320 to about 435°F.

58. The method of Claim 1, wherein drying is conducted for about 1 minute to about 10 minutes at temperatures within the range of from about 150 to about 300°F, and curing is conducted for about 0.5 to about 5 minutes at temperatures within the range of from about 320°F to about 435°F.